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ATTACHMENT A

First Seller Design Description¹

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Executive Summary: Summary of Findings

This paper explores the First Seller point of regulation with the intent of articulating more completely how such a policy mechanism would work. The objective was to define aspects of the First Seller mechanisms and identify the feasibility of available alternatives. The paper focuses on the operational feasibility of the First Seller approach and its impact on the efficiency of the wholesale electricity market in California and Western North America. Whether the First Seller approach is “good” or “bad” from the perspective of climate change policy is outside the scope of this paper. This paper also does not address the legality of the First Seller approach under the Federal Power Act and the Commerce Clause.

We identify a number of issues with important policy implications. Where possible, we also identify the policy choices and describe their likely impacts on the mechanics or feasibility of the First Seller approach. Where appropriate we describe the impacts of policy choices on wholesale electricity markets.

The paper’s findings are summarized below. For each finding a reference is provided to the discussion item in the balance of the paper where the aspect of the First Seller mechanism is discussed in more detail.

¹ This work was funded by The Energy Foundation and was prepared for the Inter-Agency Working Group under the direction of the CPUC staff. Resero Consulting staff sought input from CPUC staff and its consultants, potentially impacted entities such as companies that import power into California, publicly owned utilities operating their own Balancing Authorities and serving load in California, and CAISO staff.

Findings

- A. For First Sellers importing into the California ISO, electronic tagging information (eTags) provides enough information to identify the point of regulation (the First Seller entity). (See discussion item 5.)
- B. There are First Sellers who serve load in California with resources located outside of California for which no eTag is generated. These Balancing Authorities (BAs) – non-CAISO BAs – serve load in California but not within the CAISO. They will require alternative methods to assess carbon impacts, and regulation for such entities will more likely resemble a Load-Based approach under a First Seller regime. There is a potential for resource shuffling (routing deliveries so as to result in lower carbon impacts given accounting limitations) with these First Sellers comparable to what would exist with a Load-Based approach. (See discussion item 5.)
- C. eTags cannot be used to assign carbon content for imported power because they do not consistently identify the exact generating resource that produced the energy. Control area information on the eTags may or may not represent the ultimate sources of the energy. This suggests that eTags alone cannot provide for specification of sources, and averaging of carbon content will still be required if the eTag or scheduling information is for sources that are not specified through some other mechanism. (See discussion items 6 and 7.)
- D. Using contract information to assign carbon content to imported energy is more challenging under a First Seller approach, since the points of regulation for imports constitute a larger set of entities with much more diverse business interests. Moreover, mixing a contract approach with the use of scheduling or eTag information to identify sources is problematic, as it creates the potential for preferential treatment among First Seller importers. (See discussion items 8 and 9.)
- E. CAISO systems should be able to support a policy that excludes wheel-through transactions from regulation if that is desirable. (See discussion item 4.)
- F. The First Seller approach should mesh properly with the CAISO Day-Ahead and Real-Time markets as long as the method for assigning carbon content to imported energy is no more granular than by import point (meaning that using a system-wide import average, averages for NW/SW regions, or averages at specific import points such as the California Oregon Border COB should be workable). Assigning carbon content at a finer level of granularity – to specific sources or control areas outside of the CAISO – will create discontinuities between the bilateral markets and the spot (Day-Ahead and Hour-Ahead/Real-Time) CAISO

markets, because the CAISO will not differentiate energy supply by carbon content. (See discussion item 10.)

- G. First Seller importers will likely prefer auctioning all allowances and distributing the auction proceeds back to LSEs. Allocating allowances to First Sellers is not feasible given the diversity and evolving market participants considered First Sellers. (See discussion item 11.)

The paper contains discussion items related to the point of regulation, assignment of carbon content, as well as other items including the alignment with the wholesale markets and implications for distribution of allowances.

Introduction and Organization

This paper explores the First Seller mechanism with the intent of articulating more completely how it could work. The purpose of the paper is not to offer an opinion on whether the First Seller approach is “good” or “bad” from the perspective of climate change policy. Rather the intent is to articulate possible ways in which to implement a First Seller point of regulation and to discuss the inter-relationships of the First Seller rules with the wholesale energy markets.

We identify a number of issues with important policy implications. We also indicate where the First Seller mechanism touches policy implications or where further regulatory work seems warranted.

This paper addresses the following topics:

Regulation of First Sellers

1. Basic representation of First Seller
2. Types of entities that should be regulated
3. Entities that should be regulated as importers
4. Wheel-through transactions, and the ability to exclude them
5. Basic information flows needed to identify First Sellers

Assigning Carbon Content to Imported Power

6. Assigning carbon content based on scheduling or tagging information
7. Options and feasibility of specifying imported-power sources for assigning carbon content
8. Feasibility of assigning carbon content using contracting information compared with a similar approach for assigning carbon content under Load-Based regulation
9. Need for consistent treatment when assigning carbon content

Other Items

10. Alignment of First Seller approach and CAISO Day-Ahead and Hour-Ahead/Real-Time electricity markets
11. Impact of various approaches for assigning and/or auctioning allowances on the feasibility and effectiveness of First Seller

Topics were organized in the order shown above solely to facilitate discussion; no priority is intended to be conveyed by the ordering.

Regulation of First Sellers

1. Basic Representation of First Seller

Under a First Seller approach, in-state sellers (generators) will be regulated. They will have to acquire allowances for their carbon emissions based on reported fuel consumption and/or direct measurement of emissions. Entities that import power into California will also be regulated, and will be required to obtain allowances for the carbon content of emissions associated with the energy they import. Thus, both in-state generators and importers of power are regulated as First Sellers. This will be true despite the fact that the generator First Seller is physically providing or “injecting” energy into the electric grid, whereas the importer First Seller is simply providing a contract-based reporting of energy into California to facilitate control area checkouts and to account for the energy if it is provided to the CAISO. The importer First Seller is not, however, physically affecting the flow of energy as is the generator First Seller.

The number of First Sellers that must be regulated is significantly larger than the number of entities that would be regulated under Load-Based regulation. (For example, there are more than 75 CAISO Schedule Coordinators, or entities that are authorized to schedule power into

the CAISO.) First Seller requires tracking wholesale power transactions to identify a constantly changing set of First Sellers rather than a smaller and fairly stable set of load-serving entities (LSEs). In that sense it is somewhat more complex than a Load-Based approach.

2. Types of Entities Regulated as First Sellers

A wide range of types of market participants would be regulated as in-state generation owners:

- Generating companies (“pure” merchant producers, producers with long-term contracts)
- Investor-owned utilities (IOUs) owning or controlling generation
- Municipal utilities
- Co-generators (combined electric and thermal production) and self-generators²
- Federal power agencies, e.g., WAPA

3. Types of Entities Regulated as Importers

Many types of companies will be regulated if they meet the definition of a firm/entity that has ownership control of electricity at the point of importation:

- Marketing companies
- IOUs that import power from out-of-state sources to serve load in California
- Municipal entities that import power from out-of-state sources to serve load in California
- Out-of-state utilities that import power at one location and export it at another (wheel-through) to serve load outside California.
- Federal Power Agencies
- State Water Agencies

4. Ability to Exclude Wheel-Through Transactions

Some First Seller transactions move electricity from one location outside California to another location outside California. The systems that support CAISO’s MRTU will be able to distinguish wheel-through transactions from imports and exports to the extent that CAISO Scheduling Coordinators provide balanced wheeling schedules (schedules that provide the same quantity imported as exported), identify those schedules as wheeling transactions, and follow the

² Regulators will have to determine whether and how First Seller applies to certain sources such as renewable energy producers.

CAISO's protocols for scheduling such transactions. The CAISO has indicated that information regarding wheeling transactions can reasonably be provided to a third party so that carbon emissions associated with wheel-through transactions could be exempted from any First Seller requirements.

Policy/Legal Attention Needed: To the extent that regulators do not establish "carve outs" for these wheel-through transactions, California may end up regulating entities where neither the origin (source) nor the destination (sink) for wholesale power transactions are within California. California GHG regulations will in that case impose costs on LSEs outside California that may be considered inappropriate. Moreover, these regulations would tend to limit liquidity in wholesale power markets throughout the WECC. Wheel-through transactions may not create this particular complication under the Load-Based method if regulation is limited to LSEs located in California (without export transactions regulated).

5. Basic Information Flows Needed to Identify First Sellers

For in-state generators, emissions data would be collected in the same way as has been proposed for Load-Based methods. No emissions would be directly attributed to LSEs except to the extent that the LSE is the generation owner.

For Imports, several methods will be required to identify First Sellers, since some imported power crosses control area or BA boundaries and some does not. For power that is imported into the CAISO BA, the eTag is generally believed to provide sufficient information about who owns (has title to) wholesale power when it enters California at a CAISO scheduling point. There are three potential sources of eTag information, listed below. The regulating body would have to be authorized to receive the information from whichever source is selected.

- First Sellers, which would be responsible for reporting information that could be audited via eTags
- The Balancing Authority
- WECC

We did not examine the feasibility or the legal or regulatory implications of invoking these options, and further legal/regulatory attention would be required if the eTags themselves were going to the source of reported information.

For power that is imported into California but does not cross a BA area boundary, the reportable information would likely be provided by the BA (e.g., WAPA, LADWP, PacifiCorp, Sierra Pacific, and MWD, which essentially constitute the entire population of First Sellers who fall into this category). eTags are not generated for these power flows. Since no other data is exchanged at the California border, there may be no convenient way to obtain party, volume and source information from data streams that already exist. (In this case, entities would have to generate the information specifically for tracking GHGs.) It is expected that regulators would have to impose mandatory tracking of import sources for these BAs. Doing so effectively moves the monitoring boundary upstream to encompass the entire BA Area, beyond California's geographic borders for BAs that are outside the CAISO. It also effectively treats BAs outside the CAISO as if they have a Load-Based reporting requirement by requiring them to report all imports into their BA and all generation in their BA that serve California load.

Regulatory attention may be warranted to identify and deal with potential “shuffling” (routing deliveries to result in lower carbon impacts given accounting limitations) within the non-CAISO BAs. If a BA is allowed to report specific sources of power for serving its load from in-state and out-of-state sources, there could be shuffling of the energy the BA reports was used to serve California load as opposed to energy that was exported or that served load outside California (for example in the case of PacifiCorp or Sierra Pacific). Would that be left to the discretion of the BA's California LSE? Another option is to assign a non-CAISO BA-average carbon content to all the BA-internal energy used to serve the non-CAISO BA's California load, and this might be seen as limiting by the BAs. Like the treatment of imported energy, the treatment of non-CAISO BA energy has alternatives, each with trade-offs.

Note, however, that based upon the CPUC reporting decision,³ the importer also has the burden of reporting. In this sense the obligations for reporting and the propensity for contract shuffling would appear to be comparable across all importers, those importing via the CAISO and those importing through a non-CAISO BA, with the eTags potentially offering a convenient way for the CAISO importers to gather and account for their import transactions.

³ Public Utilities Commission of the State of California, “Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards into Procurement Policies,” Decision 07-09-017 (September 6, 2007).

Assigning Carbon Content

Items 6 through 9 focus on how carbon content will be assigned under a First Seller regime, addressing specifically whether scheduling or tagging information provides sufficient information to assign carbon content, the various options for assigning sources under the First Seller approach, the feasibility for using contracting information under a First Seller approach relative to under a Load-Based regulation approach, and questions related to consistent treatment for carbon content assignment under a First Seller approach.

6. Assigning carbon content to imported power based on scheduling or tagging information

Two major areas must be addressed when assessing carbon; they are in-state-generation and imported power. For in in-state generation, identifying carbon emissions should be straightforward and is already the subject of extensive discussions. We shall therefore focus more on imported power using scheduling or tagging information. For imported power, identifying the source or carbon content under a First Seller approach may be at least as challenging as doing so under a Load-Based approach.⁴ In principle, the eTag can be used to identify the seller. However, the eTag rarely identifies a specific generating plant. Instead it generally identifies an upstream control area, for example BPA, BC Hydro, or Montana Power. Moreover, the reality of the trading and scheduling process suggests that while a control area is listed on the eTag, it is entirely possible that the physical source of that power transaction lies within another control area. For example, a transaction that appears to originate in one control area, such as BC Hydro, could in fact be supplied by a plant in Montana and delivered to BC Hydro with a separate eTag.

⁴ Initially under First Seller, the concept of assigning sources via the electronic tag was believed to be a hopeful mechanism to assignment. Under Load-Based regulation other options (such as an LSE identifying sources of power) were envisioned that could be unmanageable under a First Seller approach. Under the CPUC's Reporting Decision, similar reporting and assignment mechanisms have been proposed seemingly independent of the Load-Based versus First-Seller point of regulation approach.

7. Options and Feasibility of Specifying the Source of Energy for Purposes of Assigning Carbon Content⁵

There are various potential levels of granularity for identifying the carbon content of First Seller imported power. Table 1 lists several of these and discusses their feasibility. In summary, source-based information for imported information cannot reliably be obtained via eTags, and trying to do so would adversely affect energy markets in the WECC and might deliver poor-quality information. Similarly, while source control area information is generally available in the eTag, it is not always accurate. For these reasons, a policy that assigns control area-based emissions rates would create powerful incentives to shuffle transactions and tagging information, and would result in inaccurate representations of the source impacts of the imported power.

⁵ This section examines options for specifying power theoretically. The CPUC's Reporting Decision assigns system average carbon contents to unspecified sources. With a system average assignment of carbon emissions to unspecified sources, complications implied in this item's discussion are mostly rendered inconsequential as would be the case if the Air Resources Board were to apply regional averages emission rates to unspecified sources.

Table 1 Possible Options for Source Specification for Imported Power

Specification/Assignment Alternative	Feasibility Using eTags	Quality/Usefulness
Specified by Generating Plant – plant-specific carbon content assigned	Infeasible. eTags rarely provide information about generating sources. Adding this information to the eTag content would likely impose a significant burden on the power scheduling process	Information may prove inaccurate given the inability to quickly and unambiguously trace back all transactions to generating plants. No reliable audit mechanism.
Specified by Control Area named in eTag – Control Area Average Carbon Content Assigned	Feasible as most eTags today identify an originating control area	Information may be inaccurate. This design would encourage parties to shuffle transactions and misrepresent originating control areas.
Specify by Import Point – Regional (e.g., NW or SW) carbon content assigned	Feasible to identify through eTag or other information (e.g., CAISO schedules)	Less likelihood of shuffling than control-area level specification, and fewer errors (with errors primarily relating to issues of loop flow).
Unspecified – WECC Import-wide carbon content assigned	Identification rendered unnecessary	Policy would be insensitive to identification of sources.

Policy Implication: Given the above, assigning generic carbon levels has the same policy implications that have been debated in conjunction with Load-Based regulation, such as

assigning separate carbon content values for NW and SW transactions versus assigning a single system-wide carbon level. The pros and cons of these approaches are similar under both Load-Based and First Seller regulation.

8. Feasibility of assigning carbon content of imported power using contractual information compared with a similar approach for assigning carbon content under Load-Based regulation

Under a First Seller approach in which import transactions are regulated, many more parties will be regulated. Further, the First Sellers will be much more diverse in their business activities than are the entities serving load in California and regulated under the Load-Based approach. Given the diversity of First Seller entities and First Seller transactions, it may be more challenging to assess the carbon content of import transactions by reviewing contracts under a First Seller approach than would be the case under a Load-Based approach. To the extent that reporting is broken down by specified and unspecified sources and regional average carbon contents are assigned to unspecified sources, assignment under a First Seller approach may be no more cumbersome than under a Load-Based approach.

If the reporting requirements under a First Seller approach are substantially more complex than under a Load-Based approach, the relative burden on various categories of First Sellers (in-state versus importer, and LSE versus non-LSE) should be considered. For example, for non-LSE First Sellers (marketers for example), types of contracts would range widely from very long term with specified sources to very short term with no specific sources. Using contract data to determine whether imports are from specified or unspecified sources would likely create an unfair cost disparity across importers. For example, permitting the presence of a long-term contract or an ownership stake to define clean out-of-state sources without providing a similar mechanism for shorter-term deals to be considered clean would create a disparity between LSE and non-LSE First Sellers (the marketers, for example). Any assignment proposals more specific than those considered for Load-Based regulation should consider the level of burden on various First Seller entities.

9. Need for Consistent Treatment of Carbon Content for Imports under First Seller Approach

Items 7 and 8 addressed the application of rules for the eTag information to allow or not allow specification and the use of contracts to specify sources. It is of course possible that some form of scheduling information (eTag or import point, for example) would be used and in addition stakeholders would ask for the ability to deem some imports cleaner than average based on contracts. This approach seems to have implications similar to those identified in item 8 – that

some First Sellers would, by design, have a much easier time deeming certain imported energy clean. Moreover, layering contract “carve outs” on top of scheduling point information or sub-regional or regional system averages would lead to preferential treatment for some parties. Thus the mixing of the contractual basis with scheduling or eTag source specification warrants careful consideration under a First Seller approach. The proposed CPUC reporting processes may offer a reasonable solution with respect to specification and assignment for unspecified sources under a First Seller regime, one that would allow comparable treatment across all First Sellers.

Other Discussion Items

10. Alignment of First Seller Approach and CAISO Day-Ahead and Real-Time Markets and Hour-Ahead Electricity Markets

This section addresses the impacts on the CAISO Day-Ahead (DA) and Hour-Ahead/Real-Time (RT) markets and implications for the First Seller definition. In-state First Sellers can, in most cases,⁶ include carbon costs in bids they provide to the CAISO’s DA and RT markets. To the extent that bids reflect the cost of carbon, CAISO DA and RT market prices will reflect added costs of carbon management. (That is, with the proper dispatch and resulting prices). The prices from the DA and RT markets will, of course, reflect the *marginal* value of the carbon and not the average value.

With imported First Seller transactions, however, if the assignment of carbon is on a more granular level than the Scheduling Point or region and if the source of the power is not known when offers are submitted to the DA and RT auctions, then bidders will not be able to include carbon costs in their energy offers to the CAISO. This is because eTags are generated after the DA auction runs and schedules are finalized, and as a result an importer may not know the source of its power supply until after the DA market has closed. This is not a problem today because for scheduling purposes, it makes no difference where the energy is sourced behind the schedule point. If, however, the carbon content is determined after the DA market bids are entered, then there is no accurate way for a First Seller importer to internalize the costs with a very granular assignment policy.

⁶ CAISO bid caps and bid mitigation may prevent the inclusion of carbon costs in generators’ bids. With First Seller, the CAISO’s bid rules should be revisited to recognize the costs of carbon.

As long as the assignment of carbon content to unspecified sources is on a system average basis consistent with the CPUC Reporting Decision the First Seller importers should be well positioned to incorporate the costs of emissions into their energy market bids. Similarly, regional average carbon assignment to unspecified sources would allow inclusion of emissions impacts into importers' bids.

In summary, if the policy is that import carbon content is assigned at the Scheduling Point or higher level of granularity (e.g., NW vs. SW, or a system-wide carbon assignment), then the ability to internalize costs of carbon into energy market bids and the resulting CAISO market prices and dispatch will reflect carbon costs. If the policy is that carbon content for imports is assigned on a more granular basis, then there are two consequences: (a) First Seller bids cannot accurately reflect the carbon costs that they will incur, resulting in risks on sellers or price premiums on energy bids, and (b) CAISO energy market liquidity will be adversely affected as importers choose to contract for specific plant output.

11. Impact of Various Allowance Allocation/Auction Approaches on the Workability and Effectiveness of First Seller

This section was prepared under the assumption that parties agree that the value of the allowances should be passed to consumers through their LSE to assist with offsetting the cost of carbon reduction. There is a clear, simple basis for allocating allowances under a Load-Based approach to those entities who will be regulated if the point of regulation is LSEs. LSEs are relatively stable with respect to their numbers, their customer (load) base and their emissions. However, allocating allowances under a First Seller approach is less feasible because it would have to include a number of regulated entities for which there is no clear, unambiguous basis for making the allocation. This is because many companies trading wholesale energy are relatively new or have recently merged or otherwise greatly reorganized themselves and continue to do so. For this reason it there seems to be no reliable basis for allocating allowances to First Seller Importers. Moreover, if policymakers are unwilling to allocate allowances to generators, then under the First Seller approach none of the regulated entities would be allocated allowances.

Allowances are generally believed to be a useful mechanism for efficiently regulating and reducing emissions. Therefore the First Seller design can work more efficiently if there is a mechanism that makes allowances available to regulated entities. An auction is the most logical, non-discriminatory way of doing this. If the market for allowances was entirely efficient

and competitive, they could be given to LSEs or they could be auctioned. Allocating allowances in these cases would be very similar to allocating congestion revenue rights in the energy markets. First Sellers are assumed to be the primary buyers of allowances. If emission allowances were simply given to LSEs and a secondary market for allowances operated without any distortions or imperfections, regulated First Sellers could buy allowances at fair prices. However, the alternative approach of auctioning allowances and distributing the resulting revenues to LSEs also ensures that First Sellers get the allowances they need while avoiding potential problems with market distortions and market efficiency. Certainly First Sellers, not all of which are LSEs, would prefer the full auctioning of allowances, as opposed to relying upon the market for allowances to be perfectly efficient and fully competitive.

Conclusion

This paper addresses possible design mechanisms of a First Seller point of regulation policy for greenhouse gases. It concludes that there are reasonable methods for identifying First Sellers for energy scheduling transactions that cross Balancing Areas into the CAISO, and that in other cases with non-CAISO Balancing Authorities that the First Seller approach will very much resemble a Load-Based regulation approach. The paper addresses several potential pitfalls of First Seller regulation, including the lack of ability to trace specific sources using eTag information. However, under the CPUC Reporting Decision, whereby regional averages would be applied to unspecified sources, many of the complexities and concerns about lack of comparability between types of First Sellers treatment become moot.

The paper suggests that the First Seller approach can mesh well with the CAISO and regional wholesale energy markets, allowing carbon costs to be internalized in sellers' bids. We recognize that this will result in carbon costs often being priced marginally rather than on an average cost basis. Finally, the paper captures the widely recognized fact that allocating carbon allowances directly is essentially infeasible under a First Seller approach, so that the First Seller approach would practically require an auction process for allowances yet allow allocation of auction revenues to LSEs.

(END OF ATTACHMENT A)